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OF THE
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PYCNOGONIDA OF THE SMITHSONIAN-BREDIN
PACIFIC EXPEDITION, 1957.

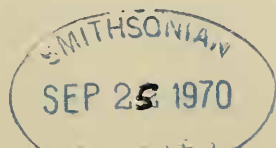
BY C. ALLAN CHILD
Smithsonian Institution,
Washington, D. C.

This paper reports on a small collection of 54 specimens representing eight species of littoral to shallow water pycnogonids from the Society Islands and Tuamotu Archipelago. The material was collected mostly along the shores and reefs and by washing coral and algae from these same areas.

There has been no previous work published on pycnogonids of the Society and Tuamotu Islands. It is therefore not surprising that five of the eight species listed here were undescribed, particularly in view of the recognized localization of many littoral species as contrasted with the widespread dispersal of many deeper water forms. The genus *Tanystylum* is represented in over half of the collection with three species. In addition, there are two species of *Ammothella*, and a single species each of *Achelia*, *Anoplodactylus*, and *Ammothea*.

Collection data is missing for two of the Bora Bora samples, recorded here as Vial 1 and Vial 2. The Bora Bora stations are numbered 47 through 72, from 22-27 April, and, although the deepest depth possible for these stations was 27 meters, the two samples in question were probably shallow to littoral, since the majority of stations were at these depths.

Pycnogonids of the islands of the Pacific Basin and even of the coasts and islands of the Pacific rim are so poorly known that comments on the origin or dispersal of the Society Islands fauna would be premature. In this collection there is only one faunistic affinity with Indo-West Pacific pycnogonids, *Ammothella indica* Stock. If the synonymy of *Ammothea hilgen-*



dorfi (Böhm), as combined by Utinomi (1959) and Stock (1966) is to be accepted, the collection represents part of an amphi-Pacific tropical-temperate complex. None of the East Indian endemic genera are present. The five genera reported in this paper are pan-tropical or pan-temperate, although the species within each have a tendency, with several exceptions such as *Tanystylum orbiculare* Wilson, to be localized.

Dr. Joel W. Hedgpeth kindly reviewed the manuscript, and his suggestions are gratefully acknowledged. The figures are the author's, drawn with a camera-lucida using whole unmounted material and stained mounted material for the appendages.

FAMILY PHOXICHILIDIIDAE SARS, 1891

Genus *Anoplodactylus* Wilson, 1878

Anoplodactylus erectus Cole

Anoplodactylus erectus Cole, 1904, pp. 289–291, pl. XIV, fig. 12, pl. XXVI, figs. 1–9; Hall, 1913, p. 133 (key); Hilton, 1916, pp. 25–34, figs. 1–6; Schmitt, 1934, p. 69; Hilton, 1939a, p. 28; Hilton, 1939b, p. 72, pl. II, fig. 9; Hedgpeth, 1941, p. 257 (key), pl. 11; Hilton, 1942a, pp. 283–286, pl. 37; Hilton, 1942b, p. 72; Stock, 1955, pp. 239–243, figs. 13–14.

Material examined: Tuamotu Archipelago, Makatea Island, Temao harbor, north of pier, 16 April 1957. One male (young adult?). Sta. 37–57.

Remarks: This single specimen agrees well with Cole's species and Stock's (1955) redescription, except for mensural characters. It is only about half as large, but the greatest difference seems to be in the shorter relative length of the lateral processes, proboscis, and chelifores in relation to the rest of the animal. This leads me to believe it is a young adult, possibly in the penultimate molt stage. Other reasons for this belief are that with normally tuberculate species, the tubercles are usually longer in juveniles and young adults. The lateral process tubercles on this specimen are slightly larger in relation to the processes than on adults of the species, and small palpi stubs are present which usually disappear in the adult of *A. erectus*. There is also a lack of trunk segmentation which often occurs in juveniles.

The specimen has the following characters which agree with *A. erectus*: the subcuticular femoral cement gland produced at the distal end as a duct, leaving most of the gland as a conspicuous tube beneath the surface; the lateral pair of setae on both distal sides of the neck; the same relative lengths of the leg and oviger joints as in the described adults; setae, heel, and sole spines that agree in number and size with

the description, but the propodal lamina seems to be either missing or barely distinguishable as a small raised portion at the distal end of the sole.

This record extends the range of *A. erectus* into the southern hemisphere.

Its previously known range was Hawaii and the Pacific coast of North America from Panama to British Columbia. This specimen from considerably further west extends the distribution pattern into the South Pacific.

FAMILY AMMOTHEIDAE DOHRN, 1881

Genus *Achelia* Hodge, 1864

Achelia adelpha new species

Fig. 1.

Material examined: Holotype. Tahiti, Papeete Harbor, anchor chain of yacht *Mareva*, in water about 4 months, 0–11 meters, 8 April 1957. One ovigerous male. Sta. 3–57. USNM 128622. *Paratypes.* Huahine, Baie de Maroe, sandy shoal and wooden post, $\frac{1}{2}$ –1 meter, 30 April 1957. Two males, 1 juvenile. Sta. 84–57. USNM 128623.

Description: Trunk circular, lateral processes touching. Cephalic segment armed with 2 narrow tubercles with 1 spine each at anterolateral margins. Lateral processes armed with narrow tubercles each with single spine: 1 on anterior and 2 on dorso-distal margin of first lateral processes; 1 on anterior margin of second and third; 1 each on anterior and posterior margins of fourth. Ocular tubercle a low rounded cone capped with small blunt tubercle, situated at anterior margin of cephalic segment. Eyes large, lightly pigmented. Abdomen short, upcurved, extending to posterior margin of fourth lateral processes and armed with 2 lateral setae near tip. Proboscis long, fusiform, broadest in proximal half.

Chelifores 2-jointed, broadening distally from narrow base, armed with 2 lateral spines and 1 distal spine. Chelae rounded stubs carried inward almost at right angles to scape, glabrous and without finger.

Palpi 8-jointed, second joint slightly longer than fourth. Suture line between joints 3 and 4 indistinct, but with marked constriction. First 3 joints glabrous, fourth with 5–6 dorsal and distal setae. Four terminal joints quadrangular with terminal joint rounded at tip, armed with ventral setae and distal setae on terminal joint.

Oviger 10-jointed, second and third joints subequal, each armed with single seta, fourth and fifth joints subequal, fourth with 2 setae and fifth with 4–5. Sixth joint armed with 1 seta, seventh with 2, eighth with 1 seta and 1 (or possibly 2) denticulate spine. Ninth joint with 1 distal seta and 2 denticulate spines, terminal joint a rounded knob having 2 denticulate spines.

Legs moderately long, first coxae with 2 lateral and 1 dorsal thin setose

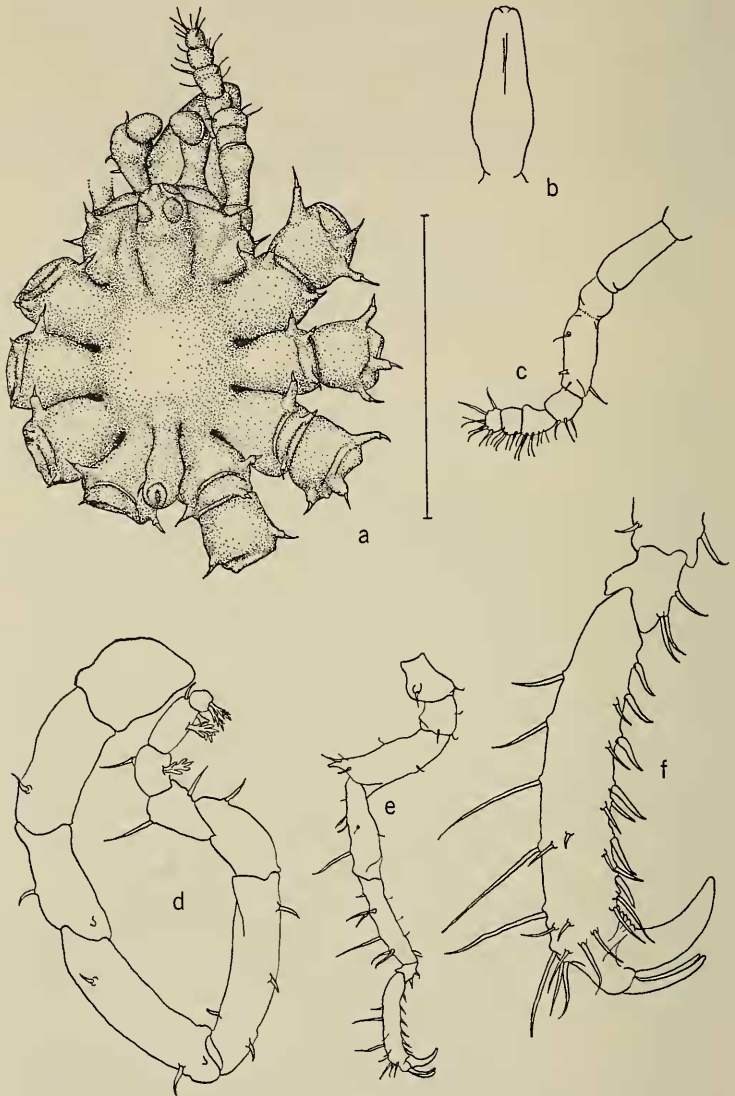


FIG. 1. *Achelia adelpha* new species. a. Dorsal view of trunk (line = .5 mm.); b. ventral proboscis; c. palp; d. male oviger; e. third leg; f. distal joints of third leg.

tubercle, second coxae with 2 lateral setose tubercles, third coxae with lateral setae only. Femur with several scattered setae and 3 spines circling femoral cement gland, a dorso-distal extension of the joint forming a distally directed funnel. Tibiae 1 and 2 subequal to femur, armed with dorsal and dorso-lateral setae longer than diameter of joint, and several short ventral setae. Propodus subequal to femur, moderately curved, without heel, armed with 6 sole spines of equal size and several dorsal and distal long setae. Terminal claw slightly less than one-third length of propodus, auxiliaries five-sixths length of terminal claw.

Measurements (in mm):

Length (anterior margin cephalic segment to tip 4th lateral process)	0.54
Width (across second lateral processes)	.50
Ventral length of proboscis	.47
Length of abdomen	.17
Length of chelifore	.15
Third leg:	
Coxa 1	.11
Coxa 2	.16
Coxa 3	.12
Femur	.33
Tibia 1	.34
Tibia 2	.36
Tarsus	.06
Propodus	.31
Claw	.10

Distribution:

Type-locality: Tahiti and Huahine Islands, Society Islands.

Depth range: 0-11 meters.

Remarks: I hesitate to add another species to this confused and in some cases extremely variable genus, but the characters of the four specimens in hand are not all shared by any other of the genus. A few species such as *Achelia nana*, *variabilis* (small form), *dohrni*, *australiensis*, *transfuga*, and *sawayai* have a circular trunk and lateral process configuration, however, this shape is more typical of the genus *Tanystylum*. *Achelia adelpha* has the 4 small terminal palp joints typical of *Achelia*, but it has some characters that are similar to those of *Tanystylum intermedium* Cole. The proboscis and trunk shape similarities are the most notable, but it lacks the large dorsal lateral process tubercles, long abdomen and ocular tubercle, and has denticulate oviger spines and smaller coxal tubercles than *T. intermedium*.

Achelia adelpha is most closely related to *A. sawyai* Marcus, 1940 (forma *besnardi* Stock, 1955, pp. 245-6). *Achelia adelpha*, however, has a shorter abdomen, smooth chelae placed anaxially rather than synaxially

on the scape, and 2 tubercles on the lateral margins of the cephalic segment, whereas, *sawayai* has single dorsal margin tubercles only.

The specific name *adelpha* is from the Greek *adelphus*, meaning sisterly or brotherly, signifying the close relationship of this species to *A. sawayai*.

Genus *Ammothea* Leach, 1814

Ammothea hilgendorfi (Böhm)

Corniger hilgendorfi Böhm, 1879, pp. 187-189, pl. II, figs. 3-3d.

Lecythorhynchus hilgendorfi Utinomi, 1959 (literature), pp. 209-212, figs. 5-6.

Lecythorhynchus marginatus Ziegler, 1960, p. 20.

Ammothea hilgendorfi Stock, 1966, p. 388 (in lit.).

Material examined: Bora Bora, west of Motu Tapu, lagoon side of ocean reef, 25 April 1957. One juvenile. Sta. 62-57.

Bora Bora, no location, 22-27 April 1957. Vial 1. One male.

Moorea, Nuarei Bay, reef opposite Pointe Teanatira, 11 May 1957.

One ovigerous male. Sta. 126-57.

Remarks: These 3 specimens agree with the fine figures and description by Lou (1936). This is the first record of this species from the South Pacific and of a purely tropical habitat. The North Pacific range previously recorded placed the species in a more temperate environment.

Genus *Ammothella* Verrill, 1900

Ammothella indica Stock

Ammothella indica Stock, 1954, pp. 113-119, figs. 54, 55, 56c, 57a-c; Stock, 1959, p. 551; Utinomi, 1959, pp. 203-205, figs. 2, 3a-f; Stock, 1968, p. 11.

Material examined: Tahiti, Papeete Harbor, anchor chain of yacht *Mareva*, in water about 4 months, 0-11 meters, 8 April 1957. One male, 4 juveniles. Sta. 3-57.

Remarks: These specimens differ from Stock's description of the types principally with regard to the placement and number of setae and spines. The count of heel spines varies from Stock's 3, to 4 and 5 in these specimens, and the sole spine count varies from 6 to 9. The long tubular spine on the first joint of the scape is not present, but is replaced by a long thin seta and the number of tubular spines is less on the femur where they are mostly lateral and ventral. The long dorsal leg setae are more than 3 times the diameter of their joint. The palpi, chelae, abdomen, and oviger correspond with the type figures.

This species has a wide distribution in the Indo-Pacific. If Utinomi's 2 juveniles are indeed *A. indica*, it ranges from South Africa to the Society Islands to Central Japan. With so few specimens recorded, it is impossible to discuss further variation or zoogeography for the species.

Ammothella schmitti new species

Fig. 2.

Material examined: *Holotype:* Bora Bora, west of Motu Tapu, lagoon side of ocean reef, 25 April 1957. One male. Sta. 62-57. USNM 128624. *Paratypes:* Bora Bora, same station. One juvenile. USNM 128625; Bora Bora, no location, 22-27 April 1957. Vial 1. One male, 3 juveniles. USNM 128626; Bora Bora, no location, 22-27 April 1957. Vial 2, rubble and algal washings. One male, 1 female, 2 juveniles. USNM 128627; Moorea, Nuarei Bay, reef opposite Pte. Teanatira, 11 May 1957. One ovigerous male, 1 juvenile. Sta. 126-57. USNM 128628.

Description: Trunk oval, lateral processes separated by one-third their width, first armed with 2 posterior spines, second with 2 anterior and 2 posterior spines, third with 1 anterior seta and 2 posterior spines, fourth with 1 anterior seta. Cephalic segment moderately broad, slightly more than twice lateral process width, armed with pointed setose tubercles on anterior margin over point between insertion of palpi and chelifores. Ocular tubercle in center of segment, short, without apical tubercle or seta. Eyes large, well pigmented. Proboscis a broad oval, typical shape for genus, with flat oral surface. Abdomen moderately short, horizontal, extending to distal end of coxa 1, armed with 3-4 lateral and dorsal tubular setae, 4 dorso-lateral long feathered setae, and 2-3 ventro-distal short setae.

Palpi 9-jointed, second and fourth joints subequal, fifth and sixth joints subequal. Terminal joint almost twice length of seventh or eighth. Second joint with distal fringe of short setae, third joint with same distal fringe and 1 lateral tubular seta, fourth joint with distal and ventral fringe of short setae, 4 long feathered dorsal setae, and 2 short ventral feathered setae. Terminal 5 joints with short to long ventral feathered setae and random short plain setae.

Chelifores shorter than proboscis, with 2-jointed scape, second joint $\frac{1}{2}$ longer than first. First joint with 4-5 dorsal and lateral tubular setae and 1 feathered lateral seta. Second joint with 5-7 tubular setae and 3-5 feathered setae. Chelae with 1-2 tubular setae and 1 long feathered seta, without finger except a minute rounded stub.

Oviger 9-jointed, fourth and fifth joints longest, subequal, second next longest and third slightly shorter. Third, fourth, fifth, and sixth joints with 1-2 short setae, seventh with 1 long and 1 short seta, 2 terminal joints with 2 denticulate spines each.

Legs setose, rather robust. Coxae 1 and 2 armed with 2-3 dorsolateral tubular setae, some with spatulate tips, and 3-4 long feathered setae. Coxa 3 with 1-2 long feathered setae. All coxae with ventral tufts of short setae. Coxa 2 and 3 subequal and together subequal to femur. Femur shorter than either tibia which are subequal. Femur and tibiae with numerous dorsal and lateral long feathered setae and 3-4 lateral tubular setae on femur. Femoral cement gland a tube, shorter than

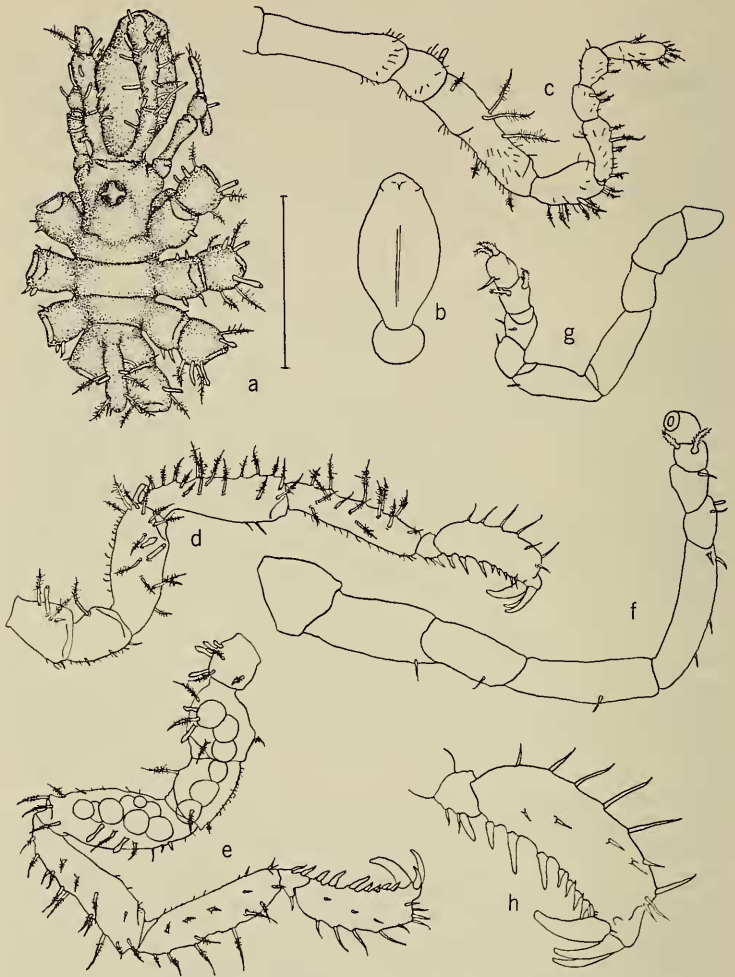


FIG. 2. *Ammothella schmitti* new species. a. Dorsal view of trunk (line = .5 mm.); b. ventral proboscis; c. palp; d. third leg (male); e. third leg (female); f. male oviger (tip broken off); g. female oviger; h. distal joints of third leg.

diameter of joint, at dorso-distal rim of joint. Tibia 2 with short ventral setae. Tarsus with 1 ventral spine and 2 setae. Propodus robust, slightly curved, subequal to femur, with 8 dorsal setae, shorter than propodal diameter, a line of 4 lateral setae, 3 heel spines, and 5 shorter sole spines.

Terminal claw little more than one-third length of propodus with auxiliaries about four-fifths length of terminal claw. Female femur slightly longer than either tibia, propodus only three-fourths length of femur.

Measurements (in mm):

Length (anterior margin cephalic segment to tip 4th lateral process)	0.66
Width (across second lateral process)	.54
Ventral length of proboscis	.62
Length of chelifore	.55
Length of abdomen	.28
Third leg:	
Coxa 1	.11
Coxa 2	.22
Coxa 3	.21
Femur	.38
Tibia 1	.45
Tibia 2	.44
Tarsus	.08
Propodus	.35
Claw	.13

Distribution:

Type-locality: Bora Bora and Moorea Islands, Society Islands.

Depth range: indefinite, but probably shallow to littoral.

Remarks: This proposed species is closely related to the Pacific species *A. heterosetosa* Hilton, and a new species to be described by the author and J. W. Hedgpeth, from the Galapagos Islands. I regret comparing this species with one whose description has not been released, but their several similarities make it necessary.

The above mentioned species have the following similarities: an inflated oval proboscis; an oval trunk with closely set lateral processes; strong chelifores with many tubular, feathered, or plain setae; moderately to heavily setose legs; and size and spine similarities in the ovigers. *Ammothella schmitti* differs from *A. heterosetosa* in the following characters: it has many less setae on the chelifores than *heterosetosa*, the setae of the latter being arranged in more or less lateral planes along the sides of the chelifores while the fewer setae of *schmitti* are arranged randomly; the tubular "spatulate" spines of *heterosetosa* seem to be inflated in the middle and taper to a narrow blunt point rather than appearing spatulate or flattened, as described by Hilton (1942a, pp. 299-300), whereas a few of the spines on the legs of *schmitti* are spatulate and appear flattened when viewed from their tip; tibia 2 is longer than either tibia 1 or the femur in *heterosetosa*, while the 2 tibiae are subequal in *schmitti*; the femoral cement gland, while of the same shape as *schmitti*, is set back from the distal rim of the joint in *heterosetosa*; there are fewer

feathered setae on the legs of *heterosetosa*, but there are more plain tubular setae in *schmitti* out of the total number of setae on each species; finally, *schmitti* has small spinose tubercles on the cephalic segment margin while *heterosetosa* has expanded lateral tubercles without setae on this segment.

The undescribed species from the Galapagos Islands differs from *A. schmitti* in having longer legs with many ventral feathered tubular setae (long hollow tubes with many tiny lateral setae), a much longer abdomen with long setae having granules along their length, very long granular lateral tubercles on the cephalic segment, very long terminal palp joints, and an ocular tubercle set at the anterior margin of the cephalic segment instead of the middle as in *schmitti*.

The new species is named for Dr. Waldo L. Schmitt, scientific leader of the expedition and indefatigable collector of marine invertebrates over the past 60 and more years.

Genus *Tanystylum* Mier^S_K 1879

Tanystylum bredini new species

Fig. 3

Material examined: *Holotype:* Bora Bora, no location, 22–27 April 1957. Vial 1. One ovigerous male. USNM 128629. *Paratypes:* Bora Bora, same sample. Vial 1. One ovigerous male, 2 males. USNM 128630 Bora Bora, west of Motu Tapu, lagoon side of ocean reef, 25 April 1957. One male. Sta. 62–57. USNM 128631; Moorea, Maharepa Bay, west of Irihonu Pass, 10 May 1957. One male, 1 ovigerous female, 1 juvenile. Sta. 116–57. USNM 128632; Moorea, same as 116–57, collected from pieces of coral pavement, 10 May 1957. One ovigerous male, 1 male. Sta. 116a–57. USNM 128633.

Description: Trunk circular, without suture lines. Partial fold or “suture” in integument between ocular tubercle base and anterior base of abdomen. Lateral processes with small blunt dorso-lateral tubercles on distal margins. Anterior margin of cephalic segment armed with single spine at lateral ends. Ocular tubercle a truncated cone at anterior margin of cephalic segment, capped by small blunt tubercle. Eyes lightly pigmented. Abdomen with a glabrous hump at base and extending only slightly beyond fourth lateral processes, armed with 3–4 dorso-lateral setae. Abdomen angled almost horizontally. Proboscis slightly curved along margins with truncated cone shape.

Chelifores of moderate length, one-fourth length of proboscis, armed with 3 distal setae.

Palpi 4-jointed, sum of 2 terminal joints less than length of second joint. Second joint with 4–5 setae and a tuft of 2–3 ventro-distally. Terminal 2 joints with distal and ventral tufts of setae.

Ovigers 10-jointed, typically reduced by half their size in the female. First joint of male as long as wide. Fourth joint longest, second and fifth slightly shorter, third just over half the fourth. Seventh and eighth joints

synaxial, seventh without lateral tubercle, but with strong spine on proximal margin, appearing opposable to 2 nondenticulate spines on terminal joint. Single seta on second, third, and fifth joints, 2-4 on sixth through ninth joints.

Legs short, robust, spinose. Coxae 1 with bilobed anterior tubercle and low dorsal tubercle with spines on tubercles and posterior margin. Coxae 2 with low ventral spinose tubercle, reduced in female. Coxae 3 nontuberculate, with 3-4 ventral setae. Femur slightly shorter than sum of coxae, moderately spinose, without marked swellings on dorsal surface. Femoral cement gland a cone on dorso-distal margin, curved dorsally. Tibiae with proximal, median, and distal swellings, each bearing tuft of setae. Tibia 1 slightly longer than tibia 2, each with several small ventral setae. Tarsus without strong ventral spine, but with 2 setae. Propodus strongly curved, without heel, with 3 large basal spines and 6-8 small sole spines. Terminal claw less than half propodal length. Auxiliaries about $\frac{3}{4}$ length of terminal claw.

Measurements (in mm):

Length (anterior cephalic segment to tip 4th lateral process)	0.58
Width across 2nd lateral processes .....	.64
Length of proboscis (ventral) .....	.5
Length of abdomen .....	.31
Length of chelifores .....	.08

Third leg (male):

Coxa 1 .....	.17
Coxa 2 .....	.16
Coxa 3 .....	.19
Femur .....	.48
Tibia 1 .....	.38
Tibia 2 .....	.35
Tarsus .....	.1
Propodus .....	.34
Claw .....	.16

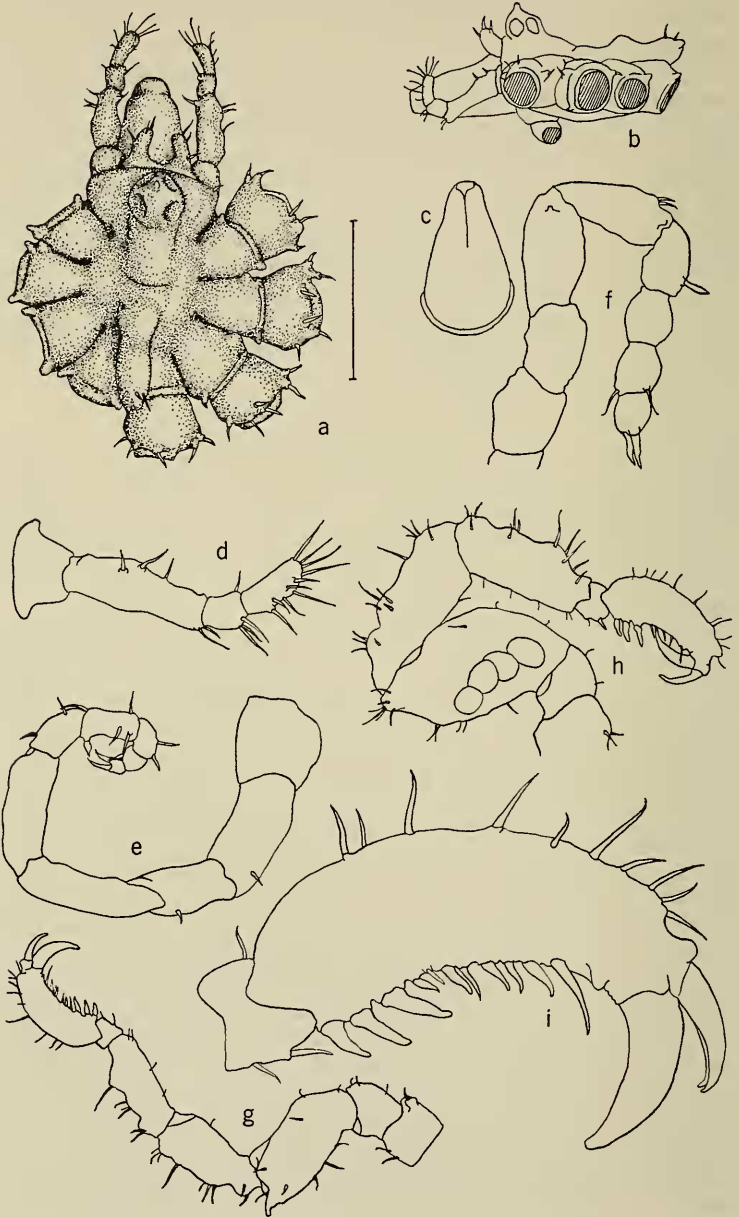
Distribution:

Type-locality: Bora Bora and Moorea Islands, Society Islands.

Depth range: indefinite, but probably littoral to shallow.

Remarks: The length of the proboscis among the 9 adult specimens varies from that figured to approximately one-sixth longer. It varies among specimens from the same station. The longer proboscis appears to be narrower, but is the same width at the base as in the shorter specimens. The specimens agree in all other respects.

Tanystylum bredini is most closely related to *T. geminum* and *isth-miacum*. All three share the following characteristics: a 4-jointed palp, fairly long chelifores, similarly shaped proboscis, and legs with dorsal



setose swellings, longer femorae than the tibiae which are almost equal, and similar propodal spination. Unfortunately, only the female is known of *T. isthmiacum*, but both *T. geminum* and *bredini* have the eighth oviger joint placed synaxial to the seventh, which lacks tubercles or lateral projections. The new species differs from *T. geminum* in having tubercles on the lateral processes and first coxae. It differs from *T. isthmiacum* by the presence of shorter chelifores and cephalic segment, a shorter abdomen having a hump at its base, a less tubular distal end of the proboscis, and tubercles on all lateral processes.

The proposed species is named for Mr. J. Bruce Bredin, generous sponsor and leader of this expedition.

Tanystylum nesiotés new species

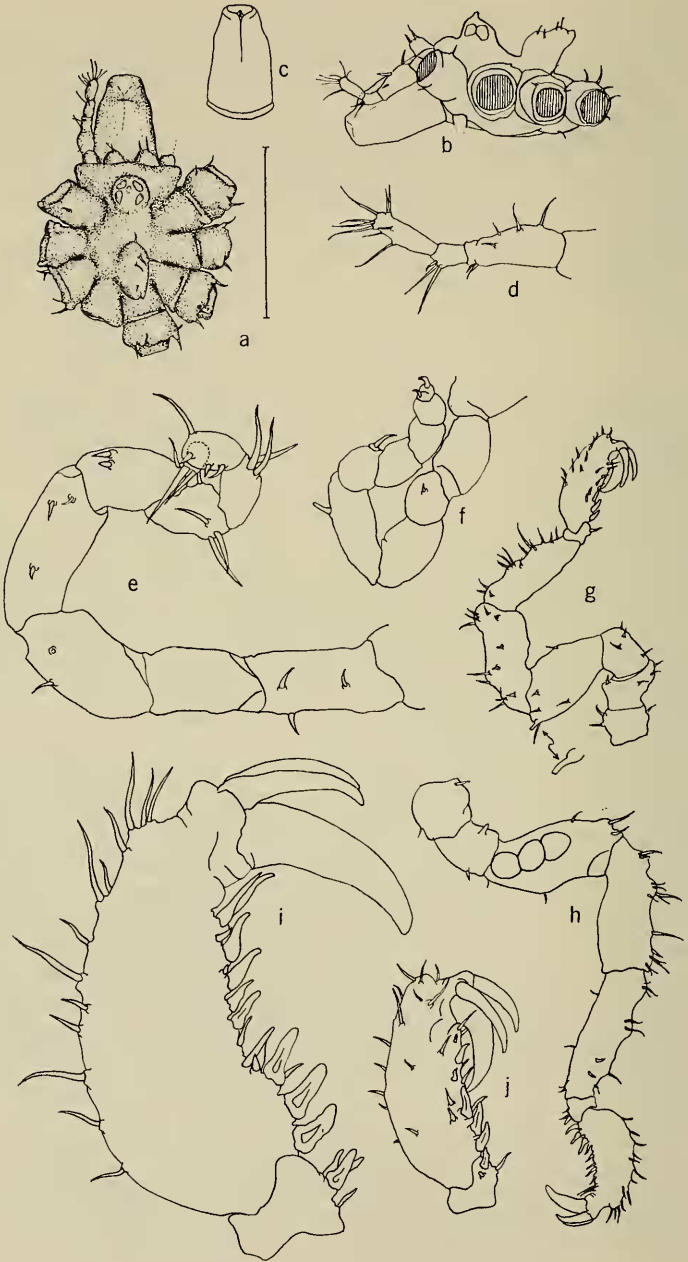
Fig. 4.

Material examined: *Holotype:* Moorea, Maharepa Bay, west of Irihonu Pass, 10 May 1957. One ovigerous male. Sta. 116-57. USNM 128634. *Paratype:* Moorea, NW end, west of Pointe Hauru, collection from reef, 8 May 1957. One female. Sta. 105-57. USNM 128635; Moorea, Nuarei Bay, reef opposite Pointe Teanatira, 11 May 1957. One male, 1 female, 6 juveniles. Sta. 126-57. USNM 128636; Tahiti, Papeete Harbor, anchor chain of yacht *Mareva*, in water about 4 months, 0-11 meters, 8 April 1957. One female, 2 juveniles. Sta. 3-57. USNM 128637; Bora Bora, west of Motu Tapu, lagoon side of ocean reef, 25 April 1957. One female. Sta. 62-57. USNM 128638; Bora Bora, no location, 22-27 April 1957. Vial 1. One female. USNM 128639; Bora Bora, no location, 22-27 April 1957. Vial 2, algal and rubble washings. Two males, 1 female. USNM 128640.

Description: Trunk circular, unsegmented. Lateral processes fully in contact except where first pair curve anteriorly away from second pair, all with low anterior and posterior tubercles except first pair which has posterior tubercles only. Anterior of cephalic segment a distinct broad truncated triangle with glabrous lateral points. Ocular tubercle a truncated cone projecting slightly forward of vertical, capped with low tubercle, situated in center of cephalic triangle. Eyes lightly pigmented. Abdomen very short, erect to 60-70 degrees, extending only halfway to posterior of fourth lateral processes, armed distally with 4-5 short setae. Proboscis bluntly conical, tapering slightly from base to distinct dorsal constriction on four-fifths distance toward mouth, a flat oral surface.

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FIG. 3. *Tanystylum bredini* new species. a. Dorsal view of trunk (line = .5 mm.); b. lateral view of trunk; c. ventral proboscis; d. palp; e. male oviger; f. female oviger; g. male third leg; h. female third leg; i. distal joints of male third leg.



Chelifores one-sixth dorsal length of proboscis, only as long as wide, armed with 2 distal setae.

Palpi 3-jointed, first joint longest, slightly inflated, second joint half length of third. First joint with 4 dorsal and several ventral setae. Second joint with ventral tuft of long setae. Terminal joint with a few long dorsal, distal, and ventral setae. Palp only slightly longer than proboscis.

Oviger 10-jointed, much reduced in female. Second, third, and fourth joints subequal, fifth longest. Second, fourth, sixth, and seventh joints armed with several short setae. Seventh joint without lateral tubercle or projection, eighth joint attached synaxial to seventh. Seventh, eighth, and ninth joints armed with distal tuft of 3-4 long setae. Tenth joint a button bearing 2 long nondenticulate spines. Spination of female oviger reduced with tenth joint bearing 2 short hooked spines.

Legs short, moderately stout, spinose. Coxa 1 with anterior and posterior lateral tubercles, each with apical spine, coxa 1 of legs 3 and 4 also armed with single median dorsal spine distally. Coxa 2 with low dorsal tubercle. Coxa 3 with small sharp dorsal tubercle. Femur and tibia 1 subequal. Femur with 3-4 dorsal setae on and around distal bulge. Femoral cement gland inconspicuous, without tubule, situated at curve of distal margin of femur. Tibia 1 and 2 with proximal, median, and distal swellings armed with tufts of setae shorter than tibial diameter. Tibia 2 longer than tibia 1. Tarsus armed ventrally with single broad blunt spine and 3 setae. Propodus robust, moderately curved, with slight heel bearing 3 broad blunt spines. Sole with 10-11 short thick spines. Claw half propodal length with auxiliaries $\frac{2}{3}$ length of terminal claw.

Measurements (in mm):

Length (anterior margin cephalic segment to tip 4th lateral process)	0.48
Width (across second lateral processes)	.5
Length of proboscis (ventral)	.34
Length of chelifere	.05
Length of abdomen	.17

Third leg:

Coxa 1	.11
Coxa 2	.16
Coxa 3	.15
Femur	.33

←

FIG. 4. *Tanystylum nesioties* new species. a. Dorsal view of trunk (line = .5 mm.); b. lateral view of trunk; c. ventral proboscis; d. palp; e. male oviger; f. female oviger; g. male third leg; h. female third leg; i. distal joints of third leg (male); j. oblique view of distal joints showing spine arrangement.

Tibia 1 .....	.34
Tibia 2 .....	.35
Tarsus .....	.07
Propodus .....	.32
Claw .....	.14

Distribution:

Type-locality: Tahiti, Moorea, and Bora Bora, Society Islands.

Depth range: 0–11 meters.

Remarks: There are three other species of this genus in which the abdomen is placed as far forward on the trunk as *T. nesiotēs*, disregarding the wide variation in placement and carriage of the abdomen displayed in various figures of *T. orbiculare*. These are *T. brevicaudatum*, *occidentalis*, and an undescribed species from the Galapagos Islands. In *T. brevicaudatum*, the proboscis differs from *T. nesiotēs* in being much longer and tubiform, and *nesiotēs* has 3 palp segments, whereas *brevicaudatum* has four. *Tanystylum nesiotēs* seems most closely related to *T. occidentalis*, except for the rounded oral surface of the proboscis, the lack of posterior tubercles on the first coxae, the rounded distal structure of the abdomen, and the greater length of the chelifores of *T. occidentalis*.

Tanystylum nesiotēs is also similar to a series of specimens from the Galapagos Islands, to be described in a forthcoming paper on Galapagos pycnogonids by the author and J. W. Hedgpeth. *Tanystylum nesiotēs* differs from the Galapagos specimens in the following respects: the Galapagos specimens are one-third larger and appear more robust and slightly more spinose; the ocular tubercle of *T. nesiotēs* is larger in proportion to the trunk and the abdomen is carried much more erect and therefore appears to be larger than that of the Galapagos specimens; the palp terminal joint is longer in proportion to the other joints of *nesiotēs* than in the Galapagos specimens; and the legs are notably less spinose, especially on the ventral surface of *nesiotēs*. The relative lengths of the oviger joints offer one of the most striking differences between the species. The second, fourth, and fifth joints of *nesiotēs* are shorter in relation to the third joint than with the Galapagos specimens. The fifth joint of both species is the longest, but it is only 1.5 times as long as the third joint of *nesiotēs* and is over twice as long as the third for the Galapagos specimens. These several differences seem sufficient to erect the new species.

The proposed name *nesiotēs* is Greek and refers to an islander.

***Tanystylum rehderi* new species**

Fig. 5.

Material examined: *Holotype:* Bora Bora, no location, 22–27 April 1957. One ovigerous male. Vial 1. USNM 128641. *Paratype:* Moorea,

Nuarei Bay, reef opposite Pointe Teanatira, 11 May 1957. One male. Sta. 126-57. USNM 128642.

Description: Trunk circular, lateral processes fully in contact. Small glabrous anterior and posterior tubercles on each lateral process. Cephalic segment slightly raised above trunk. Anterior margin of cephalic segment armed with small tubercle and seta on both lateral lobes. Ocular tubercle a truncated cone capped with small blunt tubercle. Eyes slightly pigmented. Abdomen extending only slightly beyond distal margin of fourth lateral processes, with large swelling at base, armed with 5-6 short setae. Proboscis almost length of trunk, with very large base, tapering gradually to narrow styliform tube over distal one-fourth of length.

Chelifores shorter than wide, extending about one-seventh length of proboscis, armed with single distal seta.

Palpi 6-jointed with fourth joint longest. Second and sixth joints subequal, about one-half length of fourth. Third joint little more than a short ring. Second, third, and fourth joints with a few random setae, fifth and sixth with tufts of ventral and distal setae.

Oviger 10-jointed. Second and third joints subequal. Fifth joint longest, having an apparent constriction just past mid-length. Seventh joint with lateral projection with 2 large apical setae. Tenth joint armed with 2 broad nondenticulate spines.

Legs short, robust, with sparsely developed spination. First coxae with large lateral and dorsal tubercles armed with 1-3 setae and small ventral tubercles armed with 1 seta. Coxa 2 longer by one-third than coxae 1 and 3 which are subequal. Coxa 2 with dorsal swelling bearing 1 seta. Coxae 2 and 3 with several short ventral setae. Femur with large mid-ventral swelling armed with 1 seta and flat dorsal surface with 2 setae. Femoral cement gland a large dorsal cone projecting beyond distal margin of joint. Femur shorter than sum of coxae, but subequal to tibia 1. Tibia 2 slightly longer. Tibia 1 with 2 proximal, 1 median, and 1 distal swelling, tibia 2 with 1 proximal, median, and distal swelling, each armed with 1-5 setae. Tarsus with 1 thin spine and 2 small setae ventrally, 1 small seta dorsally. Propodus moderately curved, large, without heel, bearing 3 large heel spines and 8-9 sole spines. Dorsal surface with 9 setae and 3-5 lateral setae. Terminal claw less than half propodal length. Auxiliaries slightly longer than one-half terminal claw.

Measurements (in mm):

Length (anterior cephalic segment to tip 4th lateral process)	0.72
Width across second lateral processes .....	.73
Length of proboscis (ventrally) .....	.5
Length of abdomen .....	.31
Length of chelifore .....	.04
Third leg:	
Coxa 1 .....	.16
Coxa 2 .....	.21



Coxa 3 .....	.17
Femur .....	.44
Tibia 1 .....	.46
Tibia 2 .....	.43
Tarsus .....	.08
Propodus .....	.35
Claw .....	.18

Distribution:

Type-locality: Bora Bora and Moorea Islands, Society Islands.

Depth range: indefinite, but probably shallow to littoral.

Remarks: Among the 12 *Tanystylum* species having a more or less tubiform or styliform proboscis, there are four that share other characters with *T. rehderi*. These are *T. acuminatum*, *isabellae*, *oculospinosum*, and *tubirostre*. There are the following differences between *rehderi* and *acuminatum*: only the distal fifth of the proboscis of *acuminatum* is tubiform, whereas the distal fourth of *rehderi* is this shape; the palpi of both species are much alike, but the abdomen is longer in *acuminatum*; the sum of the coxae is slightly less than the length of the femur of *acuminatum*, but the coxal sum is one-fifth larger than the femoral length of *rehderi*; and the first coxal tubercles are of greater size in *rehderi* than in *acuminatum*. Unfortunately, only the female is known for *acuminatum* and only the male for *rehderi*, so differences within the same sex of the two species are not comparable. *Tanystylum rehderi* shares several characters with *T. isabellae*; coincidence of the number and length of palp joints, the lateral process and first coxal tubercles, the lateral tubercle or process on the male seventh oviger joint, the placement and shape of the femoral cement gland, and the general shape of the abdomen. It differs from *isabellae* in the following ways: *rehderi* has a larger ocular tubercle without a large apical spike and the ocular tubercle is placed in the middle of the cephalic segment instead of at the anterior margin; it has a somewhat larger and longer proboscis, longer chelifore stumps, different shape to the lateral projection on the seventh oviger joint, and *rehderi* has a reduced number of spines on the chelifores and anterior margin of the cephalic segment. *Tanystylum isabellae* apparently also lacks the small pointed tubercles on the corners of the cephalic segment.

The new species is less like the other two species, *T. oculospinosum* and *tubirostre*, that comprise its nearest relatives. The tubular proboscis of *rehderi* is larger and directed more forward than in *oculospinosum*, and the distal curvature of the proboscis of *tubirostre* is very unlike the

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FIG. 5. *Tanystylum rehderi* new species. a. Dorsal view of trunk (line = .5 mm.); b. lateral view of trunk; c. ventral proboscis; d. third leg; e. oviger; f. palp; g. distal joints of third leg.

new species. The arrangement and size of the lateral process and coxal tubercles are different for each of these 3 species.

The proposed species is named for Dr. Harald A. Rehder, scientific member of the expedition and continuing contributor to the malacology of the Society Islands.

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